

VZCZCXRO1319  
RR RUEHLN RUEHVK RUEHYG  
DE RUEHTA #1617/01 2420233  
ZNR UUUUU ZZH  
R 290233Z AUG 08 ZDK  
FM AMEMBASSY ASTANA  
TO RUEHC/SECSTATE WASHDC 3135  
INFO RUCNCIS/CIS COLLECTIVE 0615  
RUEHAST/USOFFICE ALMATY 0689

UNCLAS SECTION 01 OF 03 ASTANA 001617

SIPDIS

E.O. 12958: N/A

TAGS: [ENRG](#) [ECON](#) [EAID](#) [EINV](#) [PGOV](#) [KZ](#)

SUBJECT: GOVERNMENT OF KAZAKHSTAN EXPLORES OPTIONS FOR EXPANDING ELECTRICITY GENERATION

ASTANA 00001617 001.6 OF 003

SUMMARY

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**¶1.** In response to a request from Kazakhstan's Ministry of Energy and Mineral Resources, on August 21, USAID completed and presented a study on options for stimulating investment in new electricity generation capacity through the use of capacity markets. The study will be presented to stakeholders in a workshop as one of the culminating activities of the first phase of the Regional Energy Market Assistance Program (REMAP). REMAP has established a strong rapport with Kazakhstani counterparts critical to the establishment of a regional market capable of increasing market-based trading within Central Asia, Afghanistan and Pakistan. End Summary.

BACKGROUND

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**¶2.** Kazakhstan has enviable economic growth and vast energy resources and yet many parts of the country face frequent blackouts. Even some urban areas in Kazakhstan are facing power shortages and possible brown outs. Current electricity generation and distribution assets need to be managed more effectively and incentives need to be provided for adding generation and distribution assets. In both areas, there is a potentially large role for private sector investment and asset management techniques.

**¶3.** Private sector investment in new generation capacity has not taken place or has been stymied due to restrictive government policies to limit exports to meet domestic demand at a highly unattractive domestic pricing cap. The pricing cap does not take into account the cost of constructing new generation facilities. Unless market mechanisms to address pricing issues are implemented and transparent regulation to access the grid for unlimited export of electricity to neighboring countries in Central Asia and Afghanistan is allowed, it will be difficult to access private-sector investment.

**¶4.** The Kazakhstani electricity market is evolving, but it is far from complete. For example there are no market-based arrangements to deal with transmission congestion, and various instruments to allow market participants to manage risks, such as "contracts for differences," and other options and futures contracts, are not available yet. More importantly, due to price caps, the majority of distribution companies in Kazakhstan cannot make the investments in metering and communications needed for improving electricity distribution. Companies continue to face high technical losses and theft. There is a need to separate market operation from transmission, and make both subject to economic regulation.

**¶5.** Despite weaknesses, the Kazakhstani government is showing some leadership in electricity sector restructuring, promotes the idea of creating a regional power exchange, and supports the operation of the regional Coordination Dispatch Center in Tashkent.

REMAP: A CATALYST FOR REGIONAL COOPERATION

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**¶16.** The USAID REMAP activity, financed jointly by the Kazakhstani government and the USG under the umbrella of USAID's Program for Economic Development, focuses on fostering: a) increased electricity exchange and trade; b) a transparent, competitive electricity market; and c) a market-based regulatory framework for regional cooperation. As REMAP winds down over the next few months, it will focus on completing activities in the below areas.

#### TRANSMISSION

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**¶17.** Kazakhstan has a limited high voltage transmission network and capacity within the country. This limitation impacts cross border electricity trade. The Kazakhstan Grid Operating Company (KEGOC) has a program to rehabilitate existing transmission lines and build several new transmission lines to remove these constraints. There are several high voltage lines under construction and there are plans to construct additional lines in the near future.

**¶18.** In order to enhance operation of the regional transmission grid, REMAP has established a regional Power System Planning Model based on the country models of transmission companies in Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and the Coordination Dispatch Center in Tashkent. The model was established through the formation of the CARTRANS Working Group (comprising transmission system operators from the region with participation from Afghanistan), which held a series of policy discussions. All five Central Asian countries have installed USAID funded improved software.

**¶19.** The final meeting of the CARTRANS Steering Committee is scheduled to be conducted on September 26 in Astana. During this meeting, the CARTRANS Working Group will present to the Steering Committee for its approval the final 2007 and 2012 national and regional models and the analysis and findings of the CARTRANS final report.

ASTANA 00001617 002.2 OF 003

#### GENERATION

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**¶10.** Despite Kazakhstan's program of industry restructuring, the introduction of competitive power markets, and establishment of regulatory institutions, Kazakhstan has not attracted investment in new generation facilities and remains a net importer of electricity from Central Asian electricity suppliers. Old generation plants with low operating costs supply most electricity at prices that are far below the price needed to attract investors to build new plants. Aware of this problem and the resulting shortages of electricity, representatives of the Ministry of Energy, the Agency for Regulation of Natural Monopolies, and the Agency for Competition Protection have all stated that a high priority for Kazakhstan is the need to provide incentives for investment in the generation sector.

**¶11.** In response to a request from the Ministry of Energy and Mineral Resources, REMAP prepared a white paper on approaches to ensuring resource adequacy and the international experience in stimulating investment in new generation capacity through the use of capacity markets. The paper reviewed various administrative and market based approaches to resource adequacy, with a particular emphasis on the structure, operations and results to date of capacity markets. In so doing, the paper reviews the interplay between energy and capacity markets and highlights the institutional roles of regulators and market participants in the operation of such markets.

**¶12.** The overall conclusion that can be drawn from the report is that due to specifics of electricity markets, "one for all products" pricing in many competitive power markets does not provide adequate price incentives for investment in new generation, therefore additional payment mechanisms need to be developed. The report describes a variety of options employed in power markets around the world and analyzes advantages and shortcomings of each of these options. Since one of the most prevalent options is an installed capacity market, the report also contains an overview of the operations of the installed capacity market in the U.S. (PJM, New

York ISO, ISO-New England) and in the Russian Federation (which was launched in early July).

¶13. Once counterparts have had a chance to comment on the paper, the findings will be presented to stakeholders in a workshop scheduled for September and entitled "Power Sector Resource Adequacy Plans within a Market Environment and the use of Capacity Markets to Stimulate Investment."

#### PRIVATE MARKETS

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¶14. REMAP support to on-going national market development and sector reform processes will go a long way to help develop market-based trading arrangements between all Central Asian countries and increase exports available to Afghanistan and Pakistan. One of the first activities that REMAP completed was a study tour for Kazakhstani government specialists Ministry of Energy and Mineral Resources (MEMR), the Competition Protection Committee (CPC), the Kazakhstan Grid Operating Company(KEGOC), and Kazakhstan Market Operator of Electricity and Capacity(KOREM) to the most progressive electric power market in the United States, PJM.

¶15. The annual policy speech President Nazarbayev gave in February 2007 included support for regional energy cooperation and called for the creation of a regional power exchange. In a related issue, REMAP worked with KOREM to streamline its operations and strengthen its capabilities to make it more accessible to cross-border trading.

Electricity trading on the KOREM market has steadily increased since inception and now stands at 15 percent of the total energy generated in Kazakhstan.

¶16. As a final activity in this area, on May 21-22, REMAP concluded an analysis and organized a regional workshop on specific market barriers in the area of the legal and customs frameworks in Central Asia to see how these regimes can more effectively support cross-border power trading.

#### REGIONAL COOPERATION HAS SIGNIFICANT BARRIERS

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¶17. Development of the electricity sector in Central Asia is closely related to water/energy sharing issues and the irrigation regime. As Kyrgyzstan and Tajikistan are planning to increase the utilization of water resources for the production of electricity to meet market demands, the economic valuation of water as a commodity and the more effective use of water for both electricity and agriculture are of great importance. These issues have become even more critical due to the current low water year.

¶18. Ancillary services, such as reserve capacity and regulation

ASTANA 00001617 003.2 OF 003

energy, are not procured using market-based mechanisms and arrangements for market monitoring by a qualified regulatory agency are weak. This results in distorted market pricing of electricity which does not reflect true market costs of ancillary services.

¶19. The countries of Central Asia have to work together to develop common policies and must be provided with the technical resources to implement shared decisions. Consistent with best practices used in other countries, there is an immediate need to harmonize legal and regulatory issues facing the market and to support trade between within and between Central Asia and Afghanistan and Pakistan.

#### USAID REMAP II

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¶20. USAID has designed and is in the process of procuring a three-year \$16 million follow-on to the REMAP activity. The bulk of the funding for the activity in Kazakhstan will be financed under the Program for Economic Development.

¶21. The following is an illustrative list of activities for Kazakhstan that may be implemented by REMAP II:

- Advice/implementation of incentives for the development of new generation capacity.
- Policy facilitation/training on market development/ modification; legal and regulatory issues, market design, energy economics, and economic regulation.
- Support for on-going national market development and sector reform processes in ways that help to develop market-based electricity trading arrangements between all Central Asian countries and increase exports available to Afghanistan and Pakistan.
- Implementation of a regional transmission planning model for transmission system analysis and planning work.
- Technical support for harmonization of national legislation and regulations related to electricity trade.
- Development of a new regional methodology for pricing of ancillary services.
- Development of a regional grid code and transmission pricing arrangements.
- Development f ways for managing transmission congestion in the 500 kV regional grid to provide the necessary pricing signals for additional transmission and generation.

¶22. While Kazakhstan's contribution to an efficient regional energy market will not be achieved without continued reforms, it does have the potential to play a significant leadership role. Kazakhstan has undergone a first round of energy sector reforms and is potentially a model for the development of the other Central Asian countries. It is also a likely investor in generation and transmission in the region. Over the long term, Kazakhstan could be a potential exporter of energy to the region and further south. It is in the U.S. interest to advance international energy security by ensuring reliable access to global markets including regional energy integration and the Central Asia South Asia Regional Energy Market (CASAREM). Kazakhstan's active involvement in developing the regional energy market is essential.

ORDWAY